

**BLIND EQUALIZERS USING PROBABILITY DENSITY  
MATCHING AND PARZEN WINDOWING**

**ABSTRACT**

An iterative method of equalizing an input signal received over a digital communication channel can include (a) using a kernel density estimate where different values of a kernel size are indicative of either a blind or a decision-directed equalization mode, (b) processing a received signal using a blind equalization mode, and (c) evaluating, on a block or sample basis, an error measure based on a distance among a distribution of an equalizer output and a constellation. The method also can include (d) updating the kernel size based upon the error measure thereby facilitating automatic switching between the blind and decision-directed equalization modes, where the kernel size is initially set to a value indicative of the blind equalization mode. The method additionally can include (e) selectively applying blind equalization or decision-directed equalization to the input signal according to the updated kernel size for subsequent iterations of steps (c)-(e).